The Division and distribution of revenue along the European Union (EU) banana commodity chains

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INTRODUCTION

There exists a fairly extensive literature, which suggests that liberalization of the European Union's banana trade is self-evidently desirable, i.e., the consumer and producer welfare gains from liberalization will considerably outweigh any losses. Yet, such analyses do not take into consideration how the total wealth (revenue and surplus) that is created along the various banana commodity chains into EU member-states is divided and distributed among nations. If trade liberalization is to fulfill the development objectives of developing countries, then it should result in a more equitable division of wealth.

Specifically, a comparative analysis needs to be made of how that wealth is divided between the exporting countries and EU member-states. The present paper is concerned with answering the first of these questions – the division and distribution of revenue along the various EU banana commodity chains. It compares the division and distribution of revenue along banana commodity chains into France, Germany and the UK. The specific questions that it seeks to answer are: how is revenue divided and distributed along various EU banana chains? Is there any evidence that a particular mode of organization of EU banana commodity chains results in a more progressive division and distribution of revenue than others? How has the implementation of the Single European Market (SEM) affected the division of revenue between EU member-states and exporting countries? Is liberalization of trade in the commodity likely to affect all banana chains in a similar way, or, is it likely to result in the displacement of some in favor of others?

The remainder of the paper is organized as follows. The second section presents the methodology, which draws upon the concept of commodity chains followed by the data that are used in this paper. This is followed by an analysis of the division and distribution of revenue along banana commodity chains into Germany, France and the UK in the third section. The fourth section discusses the implications of the findings in the three cases analyzed, and the fifth section concludes the paper.

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METHODOLOGY AND SOURCES OF DATA

Conceptually, the division and distribution of revenue along the banana chain will be done using the commodity chain concept. The paper estimates the value of this variable at the export, import, wholesale and retail stages of the banana commodity chain.

Few of the studies that have used the commodity chain concept attempt a systematic, quantitative breakdown and distribution of revenue at the various stages of a chain. Gary Gereffi has used the concept extensively to depict changing patterns in international production in the apparel (Gereffi, 1999) and more generally, the manufactures (Gereffi, 1996) sectors. In both these studies, emphasis is placed on the changing gross value of trade in the commodities by country and region of origin.[1] Raynolds (1994) used the commodity chain concept to analyze the organization of production, marketing and distribution of non-traditional agricultural products in the Dominican Republic. She identifies the factors, commodities and conditions under which certain firms have enjoyed exceptional performance in that market.[2] However, her study does not quantify the division and distribution of revenue between the various actors along the respective commodity chains. The analysis of the demand for fresh Chilean produce in the US conducted by Goldfrank (1994) places emphasis on changing consumption patterns by income and age categories, but only glosses over the various stages of individual commodity chains.[3] One notable exception is found in the work of Talbot, who has undertaken such an analysis for the coffee commodity chain. Talbot (1997:65-7) uses the retail price per pound of coffee in US cents as a proxy for the total income generated from coffee and estimates the shares paid to growers in producing countries and transport costs between production and retail. The author concludes that the distribution of coffee surplus between producing and consuming countries has changed between the 1960s and the 1980s. Up to the mid-1980s, the surplus from coffee was distributed equally between producing and consuming countries; however, after the mid-1980s there was a massive shift in surplus from coffee-producing countries to developed country TNCs (Talbot, 1997:86).[4]

Although this analysis of the EU banana commodity chains draws upon Talbot's approach, there are a few differences. First, although it is not explicit in his study, it appears that Talbot's analysis is based on nominal coffee prices only, and that the quantities of coffee traded have not been taken into consideration. Since the banana commodity chain traverses several countries, real prices cannot be applied, so this study takes the quantities of bananas traded into consideration to derive estimates of revenue generated. The basis for this is if firms exercise market power, price is not the only variable of interest. Instead, it is the change in quantity of bananas supplied by one firm at a given price in response to a unit change in quantity supplied by another that captures the exercise of market power. Secondly, the prices used in Talbot's analysis are weighted average retail prices of member-countries of the International Coffee Organization (ICO), and not the prices obtained by a particular producing country in its trade with a developed importing country. Thus, while Talbot's analysis gives some indication of what happened in the coffee chain at the global level, it does not answer the question of whether a particular mode of organization of the coffee chain results in a superior division and distribution of income. By analyzing three different banana commodity chains between the producing countries and a consuming EU member-state, this paper will demonstrate that certain forms of organization of the banana chain result in superior divisions and distributions of revenue. Thirdly, since Talbot's analysis treats coffee-producing and consuming countries in aggregate form, it is unable to explain whether

a particular country, or group of countries, is likely to survive in a liberalized coffee market, and what the resulting division and distribution of income would be. Since this study analyses three different banana commodity chains, it will be able to reach some conclusions with regard to gainers and losers from liberalization. Finally, this paper will apply the concept of exploratory data analysis, using box plots to quantify and map out the dynamics of revenue division and distribution in the EU banana trade. The data used in this paper were collected and compiled during the author's field-work in 2000.

The distribution of revenue along the banana commodity chain is presented for the case of trade between three EU member-states: Germany, France and the UK, and their trading partners. At any stage i in the banana chain, the Revenue R_i, is the product of price P_i and Quantity, Q_i, i.e.

$$R_i = P_i Q_i \qquad \qquad (6.1)$$

The share of revenue retained at the ith stage in the banana commodity chain, σ_i, is the ratio of revenue at that stage, R_i, to the sum of revenue retained at all stages, $\sum_{i=1}^{3} R_i$, i.e.

$$\sigma_i = \frac{R_i}{\sum_{i=1}^{3} R_i} \qquad \qquad (6.2)$$

DIVISION AND DISTRIBUTION OF REVENUE ALONG EU BANANA COMMODITY CHAINS

The trends in the division and distribution of banana revenue between Germany, France and the UK and their banana-exporting partners are analyzed in the sections below. In light of the fact that in the pre-SEM period these EU member-states applied different banana trade policies, which typify those that were in force in all other member-states, and given that their aggregate share of EU banana consumption exceeds 70 per cent, explanations of the distribution of banana revenue along their commodity chains in the pre-SEM period could be generalized to other EU member-states. Moreover, given that the marketing and distribution of bananas throughout the EU is undertaken by the same TNCs that operate in the above three member-states, the division and distribution of banana revenue along the commodity chains of these countries and the banana-exporting countries in the post-SEM period is likely to be highly representative of other EU member-states and their banana-exporting partners as well. Let us begin with the German commodity chain.

DIVISION AND DISTRIBUTION OF BANANA REVENUE
ALONG THE GERMAN COMMODITY CHAIN

Although bananas represent a very small segment of the German economy, they are extremely important in the fresh fruit and vegetable trade: between the late 1970s and the late 1990s, total revenue generated from bananas at the retail level ranged from DEM 879 million (USD 437 million) in 1978 to DEM 3.5 billion (USD 2 billion) in 1991, or approximately a five-fold increase in value over a period of two decades (Figure 1).

Fig. 1   Banana revenue in Germany (current prices)
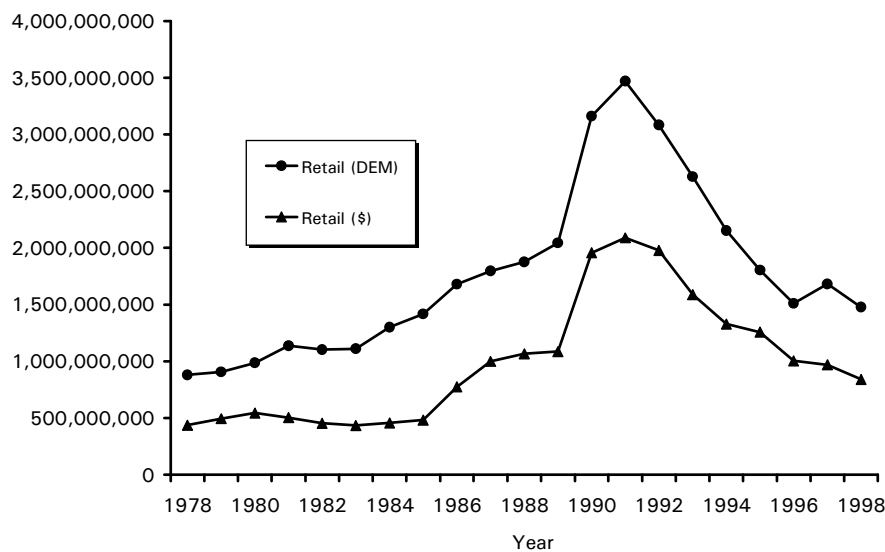
Source: Author's database.

German banana revenue increased steadily from the 1970s to the late 1980s and then accelerated in the 1990-92 period. While part of that acceleration reflected increased demand due to German reunification, reunification alone cannot explain a two-fold increase in banana consumption, since the population of Germany did not double as a consequence. Instead, most of this acceleration is explained by the strategic actions of US TNCs operating in the German market, which, in anticipation of the EU's implementation of a quota-based banana import policy under the SEM, conjectured that the EU's allocation of licences for accessing the quota would be based on the most recent supplies of operators. Acceleration of German banana revenue, which is linked to over-supply in the run-up to the SEM, is further explained in Table 6.1, which shows that although there was no significant change in the retail price of bananas between 1987 and 1993, the quantity sold effectively doubled. Since the sale of such quantities in the German market were unsustainable – they did not reflect increased per capita consumption – there has been a drastic decrease in revenue since 1992.

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Table 1   Retail price and quantity of bananas in Germany (1987-93)

Year	Quantity (metric tons)	Retail price (DEM/metric ton)
1987	695,416	2,582.50
1988	762,103	2,460.83
1989	864,938	2,363.33
1990	1,165,548	2,711.67
1991	1,346,616	2,576.67
1992	1,374,693	2,243.33
1993	1,035,575	2,537.50

Source: Author's database.

However, while the trend in total banana revenue is important for explaining the trade in the commodity in Germany, even more important in the context of this study is how that revenue has been divided and distributed between the exporting countries and various actors in Germany (Figure 6.2), and how the implementation of the SEM has impacted upon it.

Figure 6.2 shows that the perceived value of the German banana trade is different for the various actors along the commodity chain. Whereas German banana retailers realized revenues of DEM 3.5 billion (USD 2 billion) in 1991, wholesalers obtained only DEM 2.0 billion (USD 1.2 billion), importers DEM 1.5 billion (USD 898 million), and exporters a meagre DEM 657 million (USD 395 million) (Figure 6.2). In fact, throughout the period under study German banana importers, wholesalers and retailers appropriated slightly more than 84 per cent of all revenue generated by the banana commodity chain, while slightly less than 16 per cent was retained in the producing countries, on average (Figure 6.3). Therefore, the division of revenue between the actors in Germany and the banana-exporting countries is highly skewed in the favor of the former.

Even when we use the median as opposed to the mean, as the measure of centre for the shares of revenue retained by actors in Germany, we come to the same conclusions as above. Moreover, not only is the median share of revenue retained in Germany 82.9 per cent, but, as Figure 4 shows, that share has increased since the SEM came into effect. In fact, whereas the pre-SEM (1978-92) median share of revenue retained in Germany was 81.6 per cent, with all observations within 4.6 per cent of the upper and lower quartiles,[5] for the post-SEM period (1993-98) it moved to 86.5 per cent with all observations within 2.9 per cent of the upper and lower quartiles[6] (Figure 4). Thus, the SEM has made the division of revenue between actors in Germany and the exporting countries more regressive. Up to 1989, retailers were responsible for most of the revenue appropriation; however, the increased revenue appropriation from 1990 was achieved through increased shares of wholesalers and importers, as well (Figure 2).

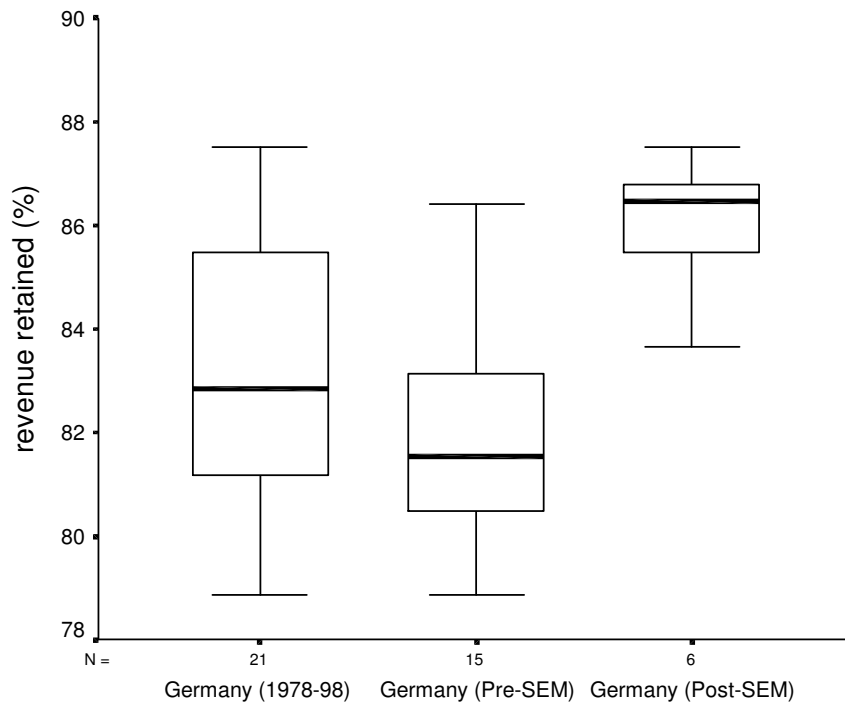**Fig. 2   Distribution of banana revenue in the German commodity chain (current DEM)**
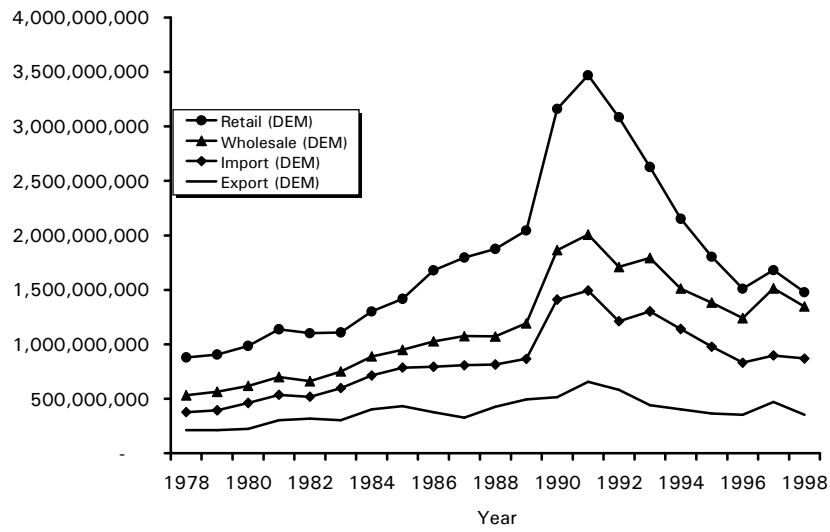
Source: Author's database.

Fig. 3   Division of banana revenue between Germany and the Exporting countries along the commodity chain (%)
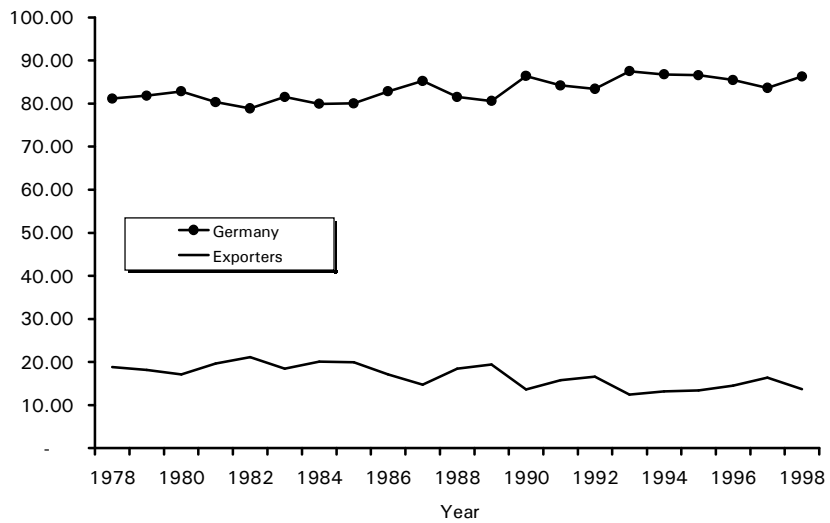
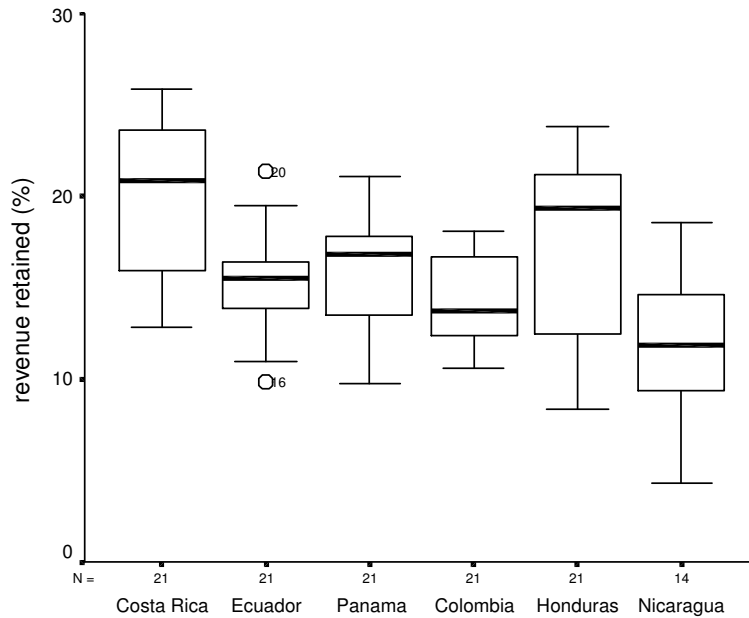*Source:*   Author's database.

Fig. 4   Box plots of banana revenue in Germany (%)

Source: Author's database.

Examination of the performance of the exporting countries for the entire period under study (Figure 5) reveals that they managed to retain different revenue shares of the banana commodity chain. Costa Rica obtained the highest median revenue share (20.8 per cent),[7] while Nicaragua was the worst performer with a median revenue share of only 11.9 per cent.[8] Moreover, with the exception of Honduras, which captured approximately 19 per cent of the revenue of its commodity chain, the remaining countries were only able to retain approximately 14 per cent (see Figure 5) of the revenue of their respective commodity chains, on average.[9] Therefore, while the tendency in the German commodity chain is to squeeze all sources of supply, Costa Rica, Honduras, and to a lesser extent Panama, have outperformed their competitors due to two factors. First, productivity on plantations in these countries is significantly higher on average than in the others. Second, because labor is more professionally organized in these countries, local trade unions command stronger bargaining power when negotiating conditions of work with the US TNCs that operate there. Thus, the larger revenue shares of the chain retained in these countries is a reflection of relatively higher wages.[10]

**Fig. 5   Box plots of banana revenue of the exporting countries in the German commodity chain (1978-98)**

Notwithstanding the foregoing argument that actors in Germany appear to have been appropriating larger revenue shares of the banana commodity chain since the SEM took effect, it is of interest to this study to determine whether or not the SEM has had an even impact on all the banana-exporting countries. Expectations of economists following the neo-classical approach, like Borrell and Yang (1990, 1992), are that all supplier countries would be adversely affected by the EU's tariff quota. If these expectations are correct, all exporting countries should retain significantly larger revenue shares in the pre-SEM relative to the post-SEM period. Box plots constructed for these periods (Figures 6 and 7) typically confirm these expectations, that is, the median revenue shares retained in most exporting countries were larger in the pre-SEM period.

Fig. 6   Box plots of banana revenue of the exporting countries in the German commodity chain (pre-SEM)
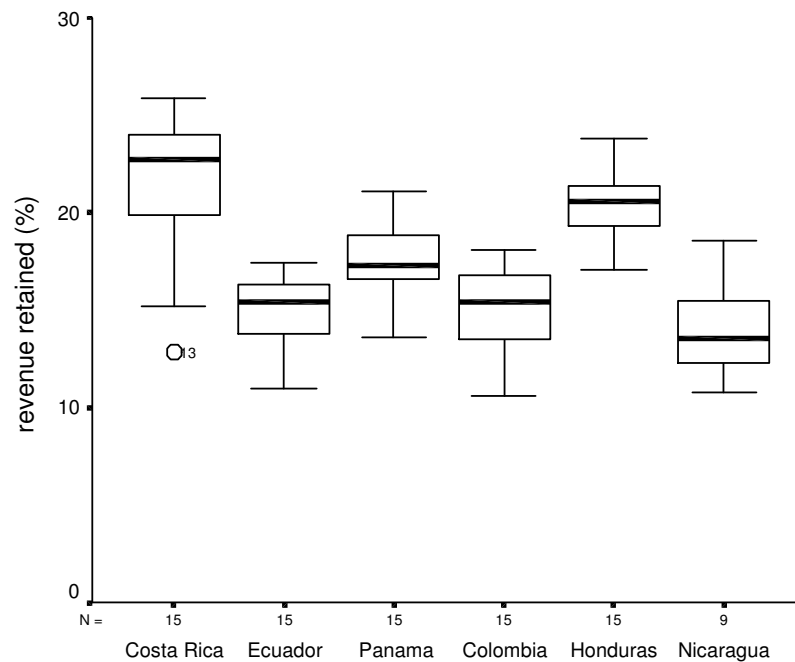
Source: Author's database.

Costa Rica, the best performer in both periods, witnessed a decline in its median share from 22.8 per cent in the pre-SEM period to 17.0 per cent in the post-SEM period, while Honduras, which retained the second-largest median revenue share in the pre-SEM period (20.6 per cent), plummeted to last place with a median share of 8.6 per cent. However, contrary to the neo-classical expectation, Ecuador managed to marginally *increase* its median revenue share, from 15.4 per cent to 16.0 per cent (see Figures 6 and 7). Exactly why this is so requires further investigation of the commodity chains leading into France and the UK, but at this stage we conclude that while the tariff-quota explains most of the decline in revenue of the banana-exporting countries, some other factor explains why Ecuador's median share increased. A possible hypothesis is that in addition to the tariff-quota, the structure of production, marketing and distribution of bananas is likely to explain the changes in the median revenue shares of the exporting countries. Whereas the US TNCs control the production, marketing and distribution of bananas in the other exporting countries, Ecuador controls these activities along its commodity chain. So let us now examine the division and distribution of banana revenue along the French commodity chain.

Fig. 7   Box plots of banana revenue of the exporting countries
in the German commodity chain (post-SEM)
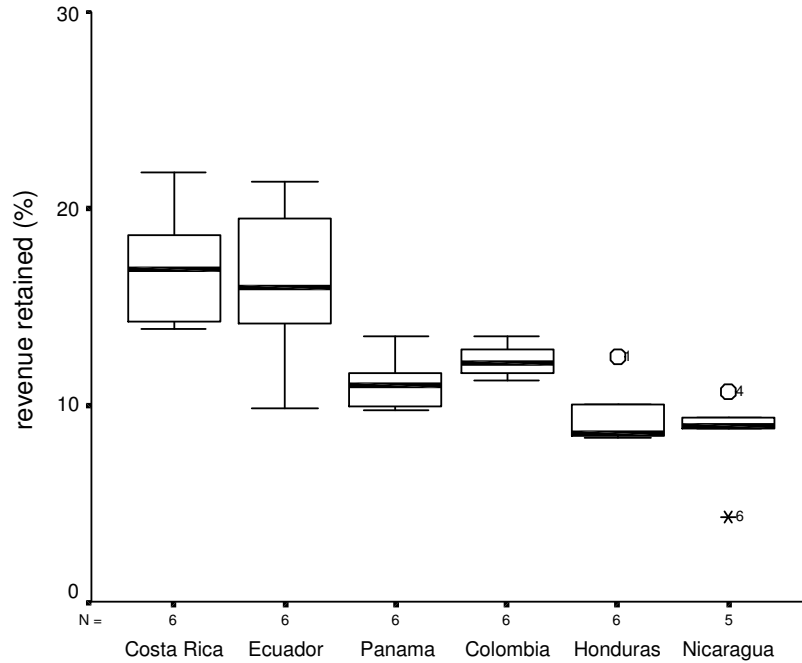
Source: Author's database.

DIVISION AND DISTRIBUTION OF BANANA REVENUE
ALONG THE FRENCH COMMODITY CHAIN

As in Germany, bananas are extremely important in France's fresh fruit and vegetable trade, where total revenue generated from them at the retail level ranged from FFR 2.2 billion (USD 500 million) in 1978 to a maximum of FFR 6.5 billion (USD 1.2 billion) in 1993, followed by a steep decline since (Figure 6.8).[11] Banana revenue in France grew steadily over the 1978-89 period, averaging 7.6 per cent per annum, before growth rates accelerated to 12 per cent per annum in the 1989-91 period. Unlike in Germany, where we attributed the acceleration in revenue to a combination of reunification and the strategic behavior of TNCs operating in that market, in France revenue acceleration is better explained by higher retail prices, coupled with relative exchange rate stability during the 1990-93 period (Table 2). It will be recalled that in the pre-SEM period France applied a tariff-quota on bananas from the dollar zone, so the option to over-supply the French market in the run-up to the SEM was not available to US TNCs. The subsequent decline in French banana revenue in 1994 is explained by a major decline in demand in the market, coupled with over-supply from dollar-zone sources; while in 1996, it was due to a combination of exchange rate appreciation and a considerable decrease in the retail price (Table 2).

Fig. 6.8   Banana revenue in France (current prices)
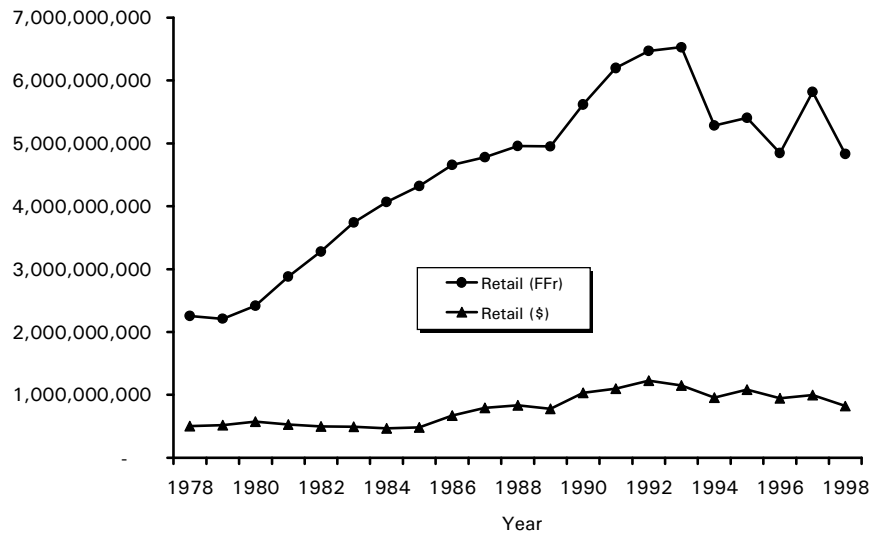
Table 2   Retail price and quantity of bananas, and exchange rate in France (1989-96)

| Year	Quantity (metric tons)	Retail Price (FFR/metric ton)	Exchange Rate (FFR/USD)
1989	447,096	11,072.50	6.38
1990	494,563	11,360.83	5.44
1991	500,491	12,382.50	5.65
1992	523,509	12,358.33	5.29
1993	582,682	11,201.67	5.67
1994	467,614	11,300.00	5.54
1995	503,119	10,740.00	4.99
1996	485,748	9,979.17	5.11

Source: Author's database.

Let us now discuss how banana revenue has been divided and distributed among the major actors along the French commodity chain since the late 1970s and determine whether or not it has been affected by the implementation of the NBR in July 1993. As in the case of Germany, the perceived value of the banana trade in France is different for the various actors in the commodity chain at different points in time and these values appear to have been more correlated in the pre-SEM than in the post-SEM period (Figure 9). French banana revenue peaked for retailers in 1993, with the commodity chain generating FFR 6.5 billion (USD 1.2 billion), while the corresponding maxima for French banana wholesalers and importers – FFR 3.8 billion (USD 666 million) and FFR 2.8 billion (USD 496 million) respectively – were realized in 1991 and exporters realized their maximum revenue of FFR 1.9 billion (USD 337 million) in 1997 (Figure 9). Unlike the typical German commodity chain, which is highly vertically integrated from production to retail and tends to be controlled exclusively by one TNC, the typical French commodity chain tends to be characterized by a number of supply contracts among various actors, making its overall co-ordination less efficient. Thus, there is a lag in adjustment to price-quantity decisions of

retailers (which are based on market demand) by other actors in the commodity chain, which explains why banana revenue peaked in different years for different actors.

Co-ordination between French banana wholesalers and importers tends to be highest due to the relatively higher degree of risk that these actors are subjected to. Once bananas are imported into an EU member-state they need to be *rapidly* transported to wholesalers for ripening in order to minimize spoilage and ensure high quality. However, wholesalers have

Fig. 9   Distribution of banana revenue in the French commodity chain (current FFR)
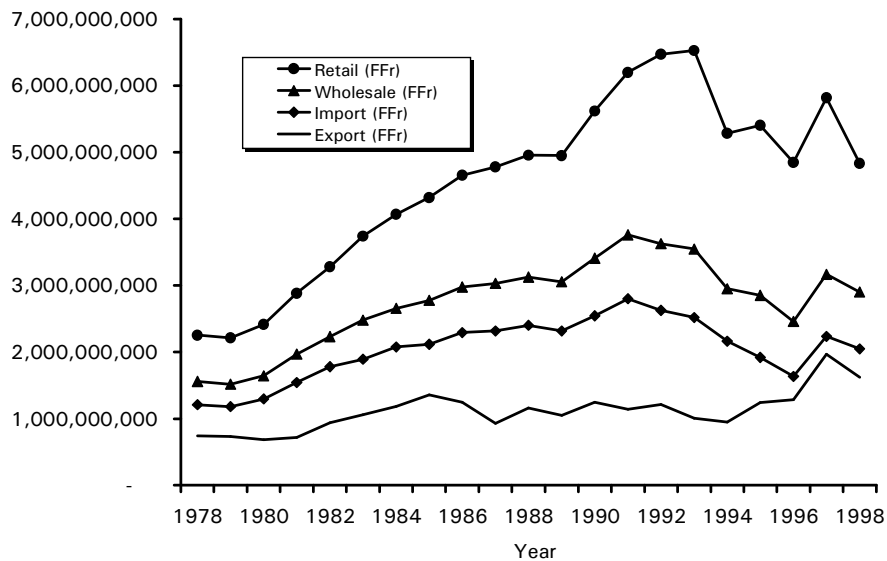
some degree of control over the pace of the ripening process, and hence, for the purposes of minimizing spoilage and quality control, the degree of co-ordination between the wholesale and retail stages is not as mission critical as it is between the import and wholesale stages. Let us now examine how French banana revenue is divided between actors in France and the exporting countries (Figure 10).

It is evident that throughout the 1978-98 period, French banana importers, wholesalers and retailers appropriated 81 per cent of the commodity chain, leaving 19 per cent on average for the exporting countries. Comparison of these figures with those for Germany leads to the conclusion that banana exporters to the French market have enjoyed a significantly larger share of the commodity chain relative to those that exported bananas to the German market. If the neo-classical hypothesis that free markets always result in superior allocation of the benefits of trade relative to protected markets is correct, then we would expect the pre-SEM division of banana revenue along the German commodity chain to be superior to that along the French commodity chain. Yet, even in the pre-SEM period a marginally smaller median revenue share was retained by importers, wholesalers and retailers in France (Figure 11) than those in

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Fig. 10　　Division of banana revenue between France and the exporting countries (%)
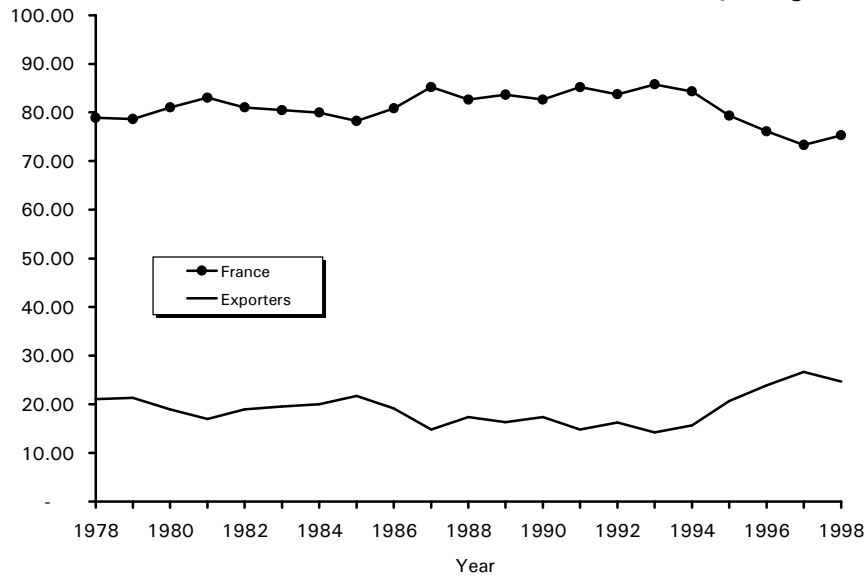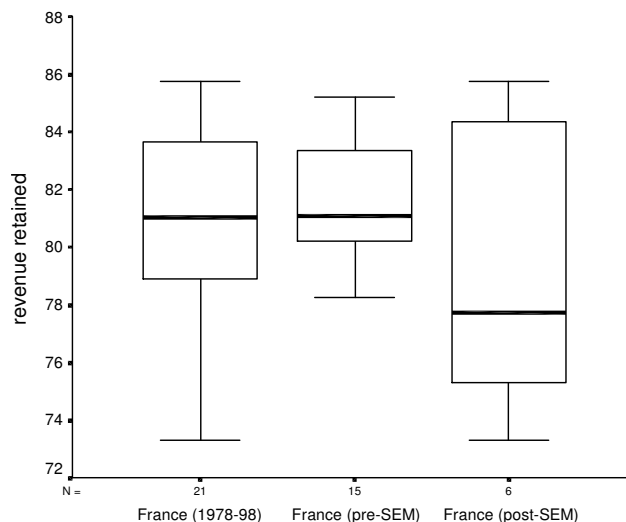

Source:　Author's database.

Germany (Figure 4),[12] contradicting the above neo-classical hypothesis. Moreover, unlike in Germany where the median share of revenue retained by importers, wholesalers and retailers increased after the SEM came into effect (Figure 4), that in France actually decreased, significantly (Figure 11).[13]

During the post-SEM period, most of the decline in the median revenue share of the commodity chain retained by actors in France took place between 1993-96, a period characterized by shrinking gaps between the shares of revenue retained by retailers and wholesalers on the one hand, and importers and exporters on the other (Figure 9). Thus, we have established that countries exporting bananas to France retained significantly larger median revenue shares of the commodity chain than those exporting to Germany. What remains to be explained is whether or not some of these countries benefited more than others.

Examination of the revenue shares of the banana commodity chain retained by the various exporting countries to France (Figure 12), reveals that some of these countries benefited significantly more than others. The best performers were Martinique (21.4 per cent) and Guadeloupe (19.8 per cent), followed by the former French African colonies of Ivory Coast (16.1 per cent), Madagascar (15.3 per cent) and Cameroon (14.9 per cent).[14] The superior performance of the French DOMs and former African colonies above is explained by their higher costs of production and preferential access to the market in France.

At the other extreme, dollar-zone banana-exporting countries retained comparatively lower median revenue shares of the commodity chain – Honduras retained the largest median revenue share in this group (16.1 per cent) followed by Panama (13.0 per cent) and Costa Rica (12.8 per cent). Excluding the Philippines from this analysis, the worst performers among the dollar-zone countries in terms of median shares of revenue retained were Ecuador (10.3 per cent) and Guatemala (9.3 per cent).

Fig. 11   Box plots of banana revenue in France (%)

Source: Author's database.

**Fig. 12   Box plots of banana revenue of the exporting countries
in the French commodity chain (1978-98)**
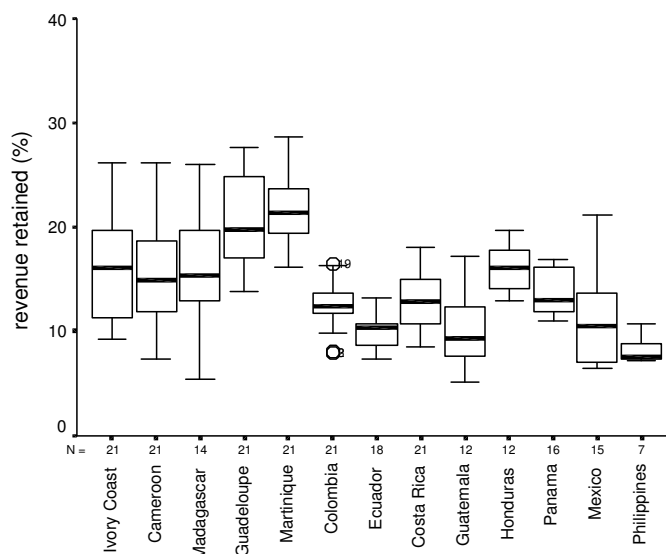
Source: Author's database.

The above clearly suggests that the protectionist banana import policy in France during the pre-SEM period is likely to have adversely affected dollar-zone suppliers. Yet, the median revenue shares of the dollar-zone countries in the French commodity chain, on the average are of the same order of magnitude as those that they received in the German commodity chain. So, let us analyze the median revenue shares of the countries that

exported bananas to France in the pre-SEM period (Figure 13), in order to isolate the extent to which the dollar-zone countries are likely to have been discriminated against.

Fig. 13   Box plots of banana revenue of the exporting countries in the French commodity chain (pre-SEM)
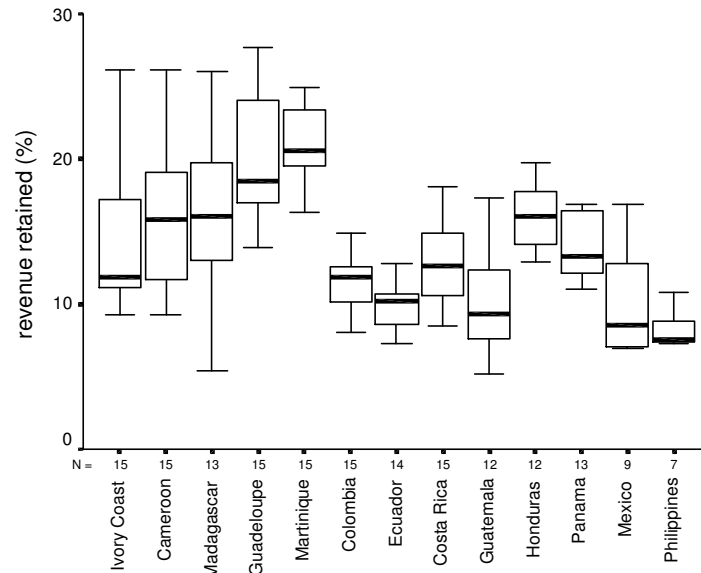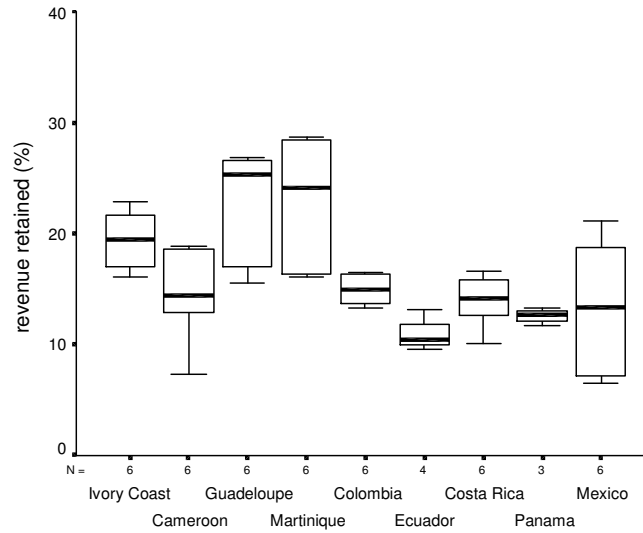

Source: Author's database.

Not surprisingly, the French DOMs retained the largest median revenue shares, and these shares were slightly larger than those which they retained during the entire period under study.[15] Equally not surprising is the performance of most of the former French African colonies, which retained larger median revenue shares.[16] An important exception was the Ivory Coast, which experienced a complete reversal of fortune – its median share of revenue retained in the pre-SEM period was only 11.8 per cent, almost 5 per cent less than that for the entire period under study.

The revenue distributions of most of the dollar-zone countries in the pre-SEM period and the entire period under study were rather similar, and there was little change in their relative positions. Mexico, the only exception, retained the least median revenue share of its commodity chain in the pre-SEM period: 8.5 per cent. The reader will recall that as far as France was concerned, the SEM effectively maintained its pre-SEM banana import policy, whereby a tariff was applied with respect to bananas from the dollar-zone. Therefore, the SEM would not be expected to have any major impact on the foregoing revenue distributions of the dollar-zone countries. Figure 14 typically confirms that expectation – the revenue distribution of the dollar-zone countries has either remained unchanged, or improved in the case of Mexico and Ecuador.[17] This explains why there was little change in the distribution of revenue for these countries between the pre-SEM and post-SEM periods. The SEM also had a positive impact on the median revenue shares of the DOMs, with Guadeloupe and Martinique recording increases of 25.3 and 24.1 per cent, respectively. Finally, among the former French African colonies, the Ivory Coast managed to increase its median revenue share of the French banana commodity chain to 19.4 per cent with somewhat reduced variability, while for Cameroon it was a slight reversal of fortune – its

median revenue share reduced to 14.4 per cent in the post-SEM period. Let us now examine the division of banana revenue along the British commodity chain.

Fig. 14   Box plots of banana revenue of the exporting countries in the French commodity chain (post-SEM)
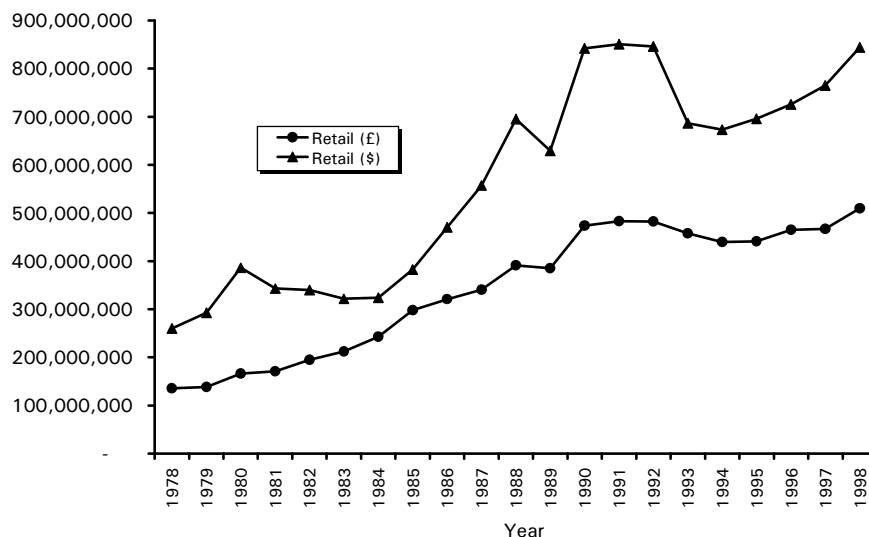

Source: Author's database.

DIVISION AND DISTRIBUTION OF BANANA REVENUE ALONG THE BRITISH COMMODITY CHAIN

While French and German revenue from bananas peaked in the early 1990s, in the UK banana revenue at the retail level peaked at about GBP 510 million (USD 844 million) in 1998 (Figure 15), representing an almost four-fold increase in value over the entire period under study.

Fig. 15   Banana revenue in the British commodity chain (current prices)

In GBP sterling terms, banana retail revenue in the UK grew steadily over 1978-88, averaging 11.4 per cent per annum, then accelerated to 23 per cent in 1989-90. Whereas the growth trend in retail revenue over the 1978-88 period reflected increased demand and consumption, the acceleration of retail revenue in 1989-90 is explained by the strategic actions of US TNCs operating in the UK market in a similar way as in Germany. Despite the preferential access which the UK extended to the ACP countries in the pre-SEM period, dollar-zone supplies have always accounted for approximately 30 per cent of its market, due in part to the capacity limit constraints of the ACP countries.

Declines in the UK banana retail revenue are explained by a general decline in UK banana retail prices over the 1987-97 period, reaching a ten-year low of GBP 914.53 per metric ton in 1995 (Table 3).

Table 3   Retail price and quantity of bananas, and exchange rate in the UK (1987-97)

Year	Quantity (metric tons)	Retail Price (GBP/metric ton)	Exchange Rate (GBP/USD)
1987	319,679	1,065.50	0.611
1988	368,144	1,062.92	0.563
1989	364,516	1,056.17	0.613
1990	415,156	1,141.17	0.563
1991	407,446	1,185.58	0.568
1992	455,700	1,058.00	0.570
1993	454,722	1,006.25	0.666
1994	441,754	995.33	0.653
1995	482,280	914.53	0.634
1996	500,212	929.57	0.641
1997	457,180	1,021.30	0.611

During that period, particularly the 1993-96 sub-period, the exchange rate of the GBP sterling to the USD remained relatively stable and the growth in quantities of bananas consumed was in line with previous years. Let us now discuss how banana revenue has been divided among the various actors in the British commodity chain (Figure 16) and determine how such revenue division has been affected by the EU's NBR.

Similarly to France and Germany, the perceived value of the banana trade in Britain is different for the various actors in the commodity chain at different points in time, and there have been three distinct trends. First, the 1978-85 period, during which the revenue shares of each component of the chain generally grew together. This is explained by the relatively high degree of predictability of demand at the time, which largely reflected increased consumption. Second, the 1986-91 period, characterized by a widening gap between the shares of wholesalers and retailers, and to a lesser extent importers and exporters. The explanation for this trend is linked to the strategic actions of US TNCs in the run-up to the SEM: the quantity of bananas sold in the market accelerated from 319,679 metric tons in 1987 to 455,700 metric tons in 1992. Although the middlemen (importers and wholesalers) in the chain were able to squeeze exporters somewhat, resulting in some divergence in their shares, retailers were able to exercise greater power over the middlemen, hence more divergence between these.

**Fig. 16   Distribution of banana revenue in the British commodity chain (current GBP)**
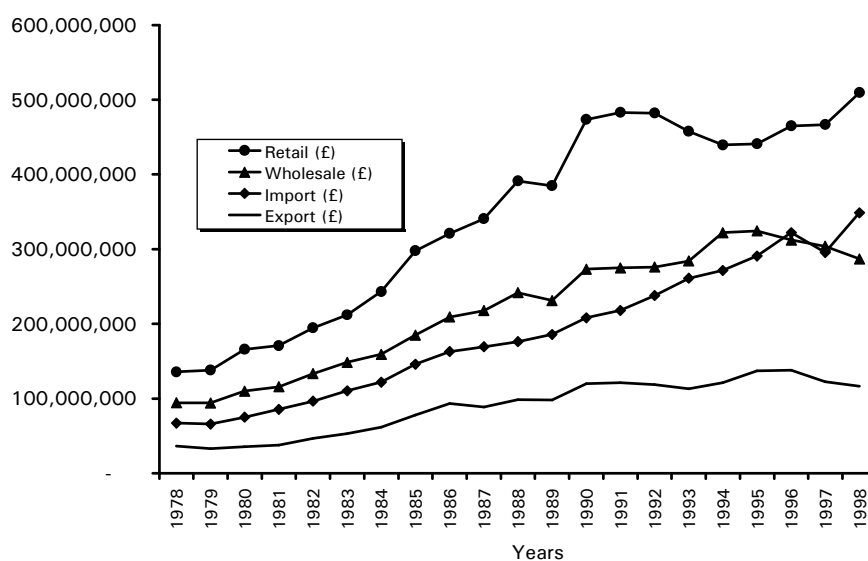
Source: Author's database.

Third, the 1992-98 period, which is characterized by convergence between shares of retailers and wholesalers and divergence between shares of importers and exporters. Here, once the NBR came into force the quantities of bananas returned to their *natural* levels, i.e., those levels which reflected demand. However now, since the middlemen owned a certain quantity of the licences, they were able to maintain their shares of the chain at the expense of retailers, which explains their convergence. Exporters on the other hand, given the general situation of over-supply which arose from the strategic actions of US TNCs in the pre-SEM

period, were forced to accept a lower share of the chain, hence their divergence. This tendency for widening gaps between the revenue shares retained by wholesalers and exporters (Figure 17) effectively resulted in British banana importers, wholesalers and retailers appropriating slightly more than 82 per cent of the value of the commodity chain throughout the period under study, leaving on average just under 18 per cent for the exporting countries.

It is evident, however, that for the pre-SEM period the median share of revenue retained by actors in Britain was somewhat lower at 81.4 per cent, compared with the post-SEM period when it increased slightly to 82.9 per cent (Figure 18). Once again, if the neo-classical hypothesis that free markets always result in superior division of the benefits of trade relative to protected markets is correct, then we would expect the pre-SEM division of banana revenue along the German commodity chain to be superior to that along the British commodity chain.

Fig. 17   Division of banana revenue between Britain and the exporting countries along the commodity chain (%)
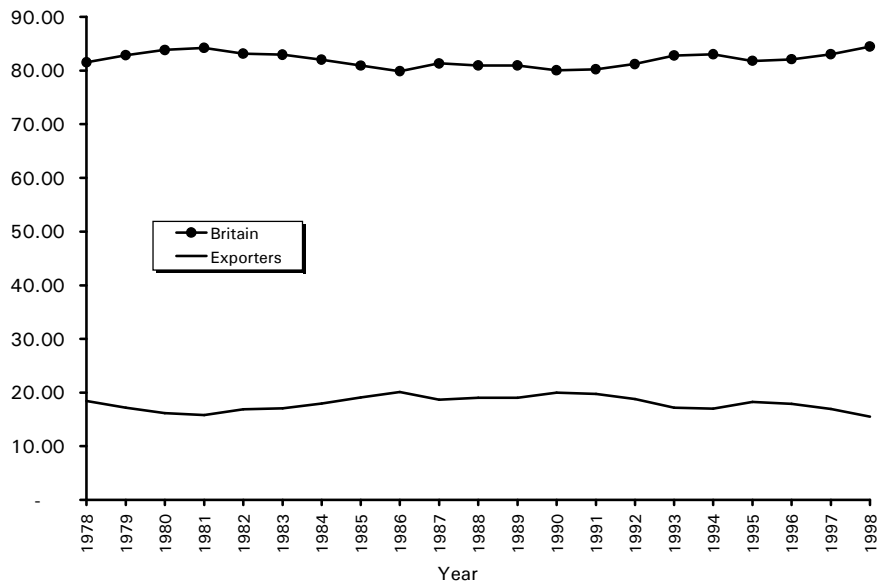
Source: Author's database.

**Fig. 18   Box plots of banana revenue in Britain (%)**
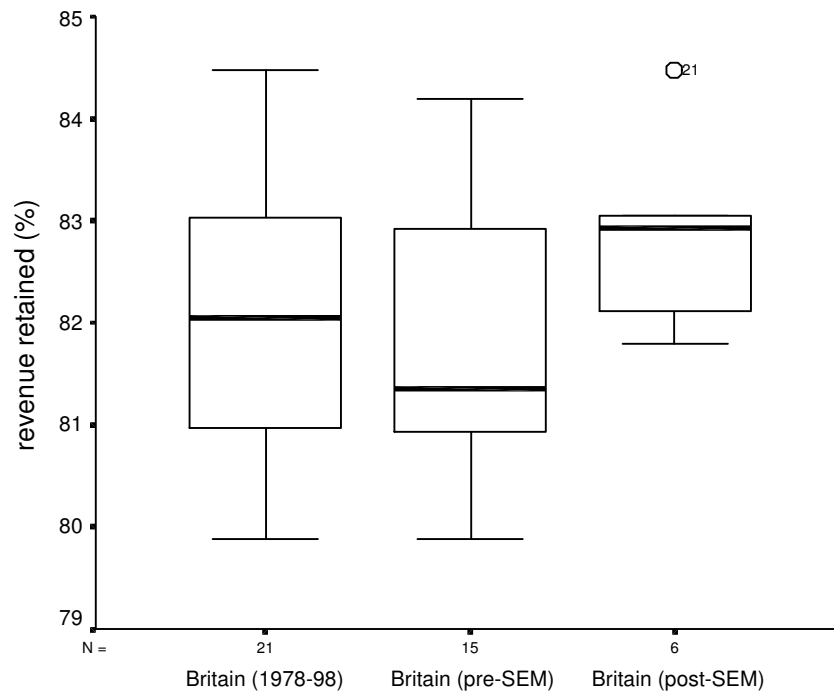
Source: Author's database.

Yet, in contradiction to the above neo-classical hypothesis, even in the pre-SEM period a marginally smaller median revenue share was retained by importers, wholesalers and retailers in the British commodity chain (Figure 18) compared with the German commodity chain (Figure 4).[18] Thus, up to this point we have established that the countries that exported bananas to the UK enjoyed significantly larger median revenue shares of the commodity chain than those that exported to Germany. What we shall now determine is whether or not some of these countries benefited more than others.

Examination of the revenue shares of the commodity chain retained by the various countries that exported bananas to the UK shows that some of them benefited significantly more than others. In order to avoid cluttering up the box plots (given the large number of countries that exported bananas to Britain) we shall focus on the shares of the commodity chain retained by the dollar-zone countries (Figure 19) and the ACP countries (Figure 20) separately.

**Fig. 19   Box plots of banana revenue of the dollar-zone countries
in the British commodity chain (1978-98)**
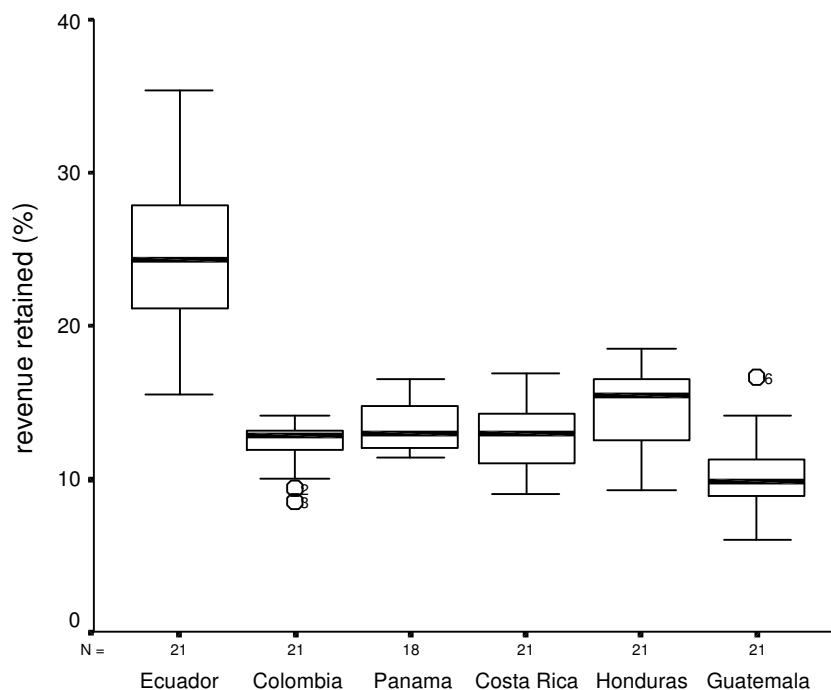
Source: Author's database.

Ecuador's performance was the best among the dollar-zone countries that exported bananas to the UK, capturing a median revenue share of 24.3 per cent of the commodity chain; the other countries obtained a median revenue share of only 13.0 per cent, with somewhat less variability than Ecuador (Figure 19). Ecuador's superior performance is explained by the direct involvement of its TNC, NOBOA, at all of the stages of the British commodity chain – production, marketing and distribution, an advantage which the other dollar-zone countries do not enjoy. Since ownership of all stages of the commodity chain is under Ecuador's control, it is in the interest of its TNC that production's share of the chain is significant relative to those retained in the UK. However, where the US TNCs are concerned, it is in their best interest to maximize their share of the commodity chain; therefore, significantly smaller shares of its value are transferred to the exporting countries. Additionally, the lower degree of variability of the median revenue shares retained by the other exporting countries is explained by the relatively greater degree of efficiency of co-ordination of the activities along these chains derived from the advantages that US TNCs enjoy as fully vertically integrated entities – economies of scale and common governance. Where the banana-exporting ACP countries were concerned, those from the Caribbean have retained the largest median revenue shares of the British commodity chain, with the least variability; the African countries have retained the least revenue shares of the British commodity chain, with the most variability; and the performance of Suriname and Belize is somewhere between these two (Figure 20).

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**Fig. 20   Box plots of banana revenue of the ACP countries
in the British commodity chain (1978-98)**
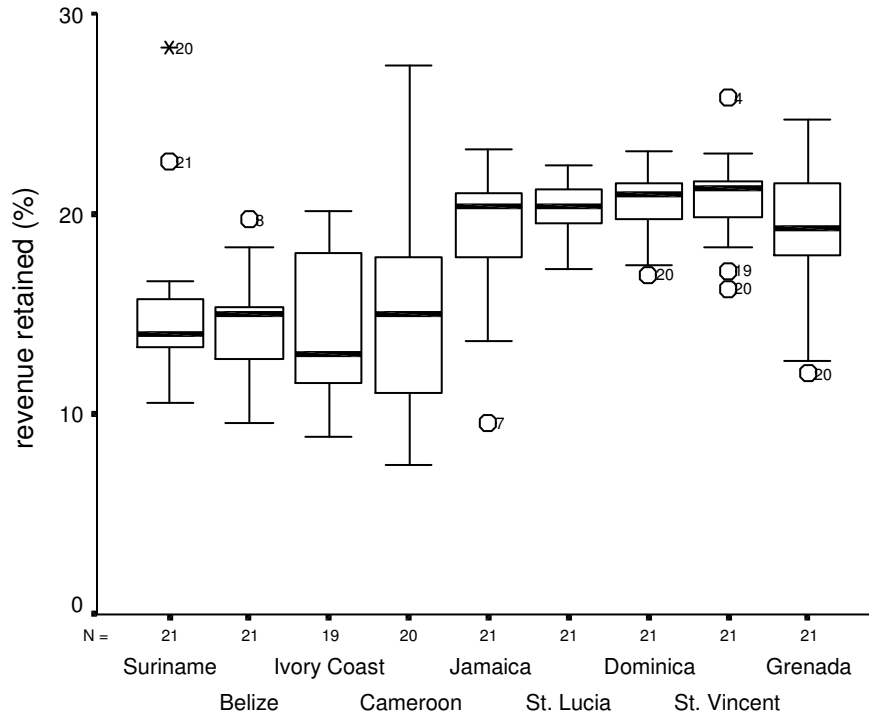
Source: Author's database.

The median revenue share of the commodity chain retained among the Caribbean countries was 20.4 per cent,[19] and within that sub-category the largest median revenue was retained by St. Vincent (21.3 per cent), while the least was retained by Grenada (19.3 per cent). Among the remaining ACP countries, Belize retained the largest median revenue share of the commodity chain (15.0 per cent), with relatively little variability, while the Ivory Coast retained the least share (13.0 per cent), with considerable variability. The explanation for the relatively larger median revenue shares of the Caribbean countries is their higher costs of production and their more organized collective bargaining approach towards actors in the UK. Joint shipping, marketing and distribution of bananas from the Eastern Caribbean countries makes it possible for them to exploit some economies of scale. Caribbean countries have attempted to integrate their production, shipping, marketing and distribution activities to a greater extent than their African counterparts. The relatively lower median revenue shares of the African ACP countries are explained by a combination of relatively lower costs of production and the fact that the UK is a residual market, and not a major market for these countries.

**Fig. 21   Box plots of banana revenue of the dollar-zone countries
in the British commodity chain (pre-SEM)**
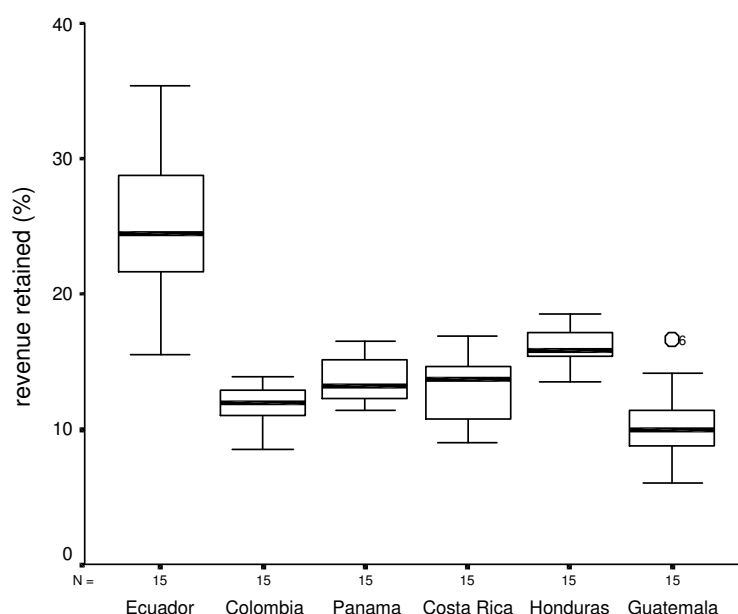
The above discussion suggests typically, but not invariably, that preferential access to the British market by ACP countries, particularly those from the Caribbean, explains in part why they retained relatively larger median revenue shares of the commodity chain than the dollar-zone countries. Yet, we have seen that it was Ecuador which appeared to have benefited the most. Let us therefore examine the distributions of revenue shares of all countries in the pre-SEM period and determine how the SEM has impacted upon them.

Conceptually, as for France, the SEM would not be expected to have any major impact on the distribution of revenue along the British commodity chain since it largely retained the UK's pre-SEM policy. Figure 21 suggests that dollar-zone countries were marginally better off in the pre-SEM period, compared with the entire period under study, with Ecuador retaining the largest median revenue share of the commodity chain at 24.4 per cent, and Guatemala the least, at 10.0 per cent. Additionally, on the whole the ACP countries also appear to have been better off in the pre-SEM period, when all the Caribbean countries retained larger median revenue shares of the commodity chain with considerably less variability (Figure 22).

Fig. 22

Fig. 22   Box plots of banana revenue of the ACP countries in the British commodity chain (pre-SEM)
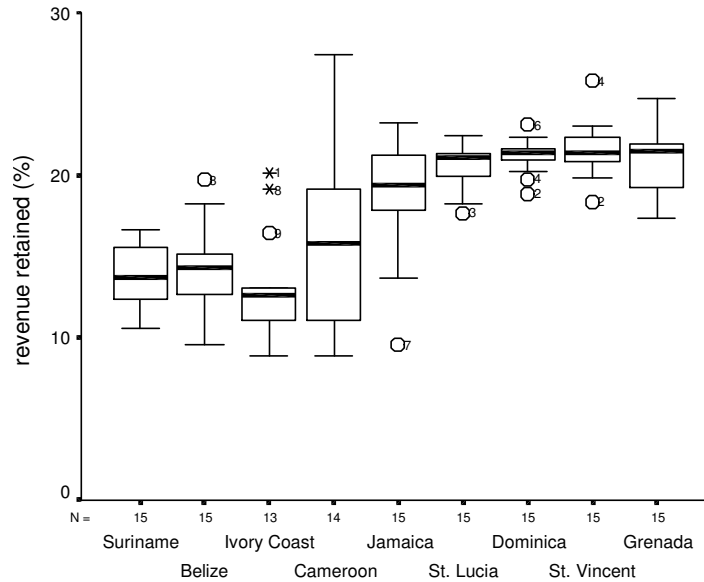
Dominica, which retained a median revenue share of 21.4 per cent, had the best performance among this sub-group of countries,[20] while Jamaica appears to have been relatively worse off in the pre-SEM period.

Figure 23 suggests that in general, the SEM has not had any major negative effect on exporters from Latin America, leaving their median shares of revenue relatively unchanged, in conformity with expectations. Exceptions were Ecuador and Honduras. Ecuador's median revenue in the post-SEM period is 22.5 per cent, almost 2 per cent less than it had been in the pre-SEM period, while Honduras' revenue share fell to 10.0 per cent. In the case of Ecuador, this is explained in terms of increased cost of operation (due to acquisition of licences) for its TNCs in the British market and reduced volumes due to the tariff-quota. By contrast, any increased costs incurred by US TNCs were redistributed along the commodity chain through transfer-pricing.

Finally, regarding the Caribbean countries, it does appear that the implementation of the SEM has slightly adversely affected their median revenue shares, which declined from approximately 20.9 per cent in the pre-SEM period to approximately 19.4 per cent in the post-SEM period (Figure 24). The explanation for the decline in the Caribbean median share is linked to uncertainty and rationalization of costs along the British commodity chain. We have seen that the EU's NBR has been highly criticized for extending preferential market access to particularly the Caribbean ACP countries, which was the basis of the WTO action by the US TNCs against the EU's NBR. The threat of such preferential access being removed by the WTO ruling has resulted in declining export production and cost rationalization by Fyffes and WIBDECO. In particular, Fyffes is increasingly sourcing bananas from some countries in Central America, while WIBDECO is implementing a certification programme as the basis on which farmers in the Eastern Caribbean receive larger revenue shares. The Ivory Coast is the only country among the other ACP countries
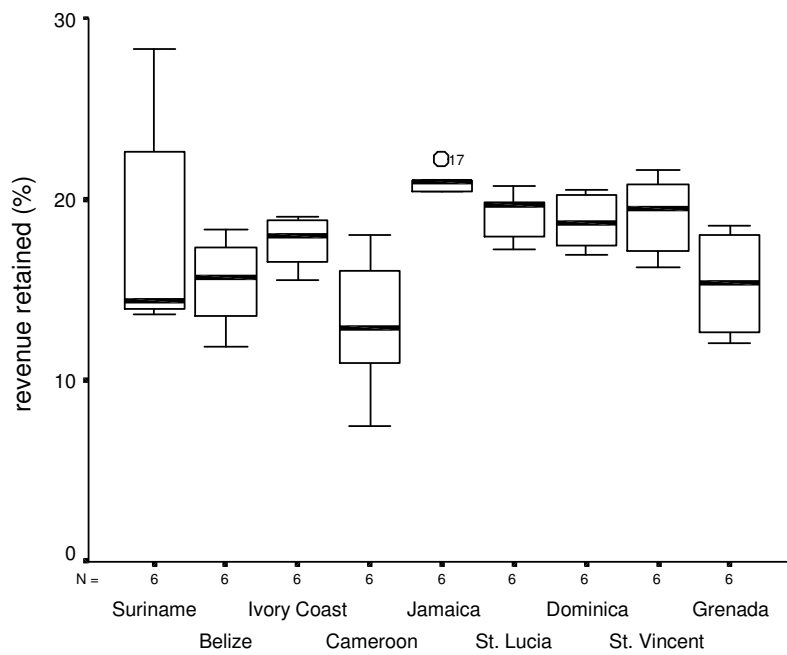
whose median revenue share increased to 18.0 per cent from 12.6 per cent, while those of the remaining countries were relatively unchanged.

Fig. 23   Box plots of banana revenue of the dollar-zone countries in the British commodity chain (post-SEM)
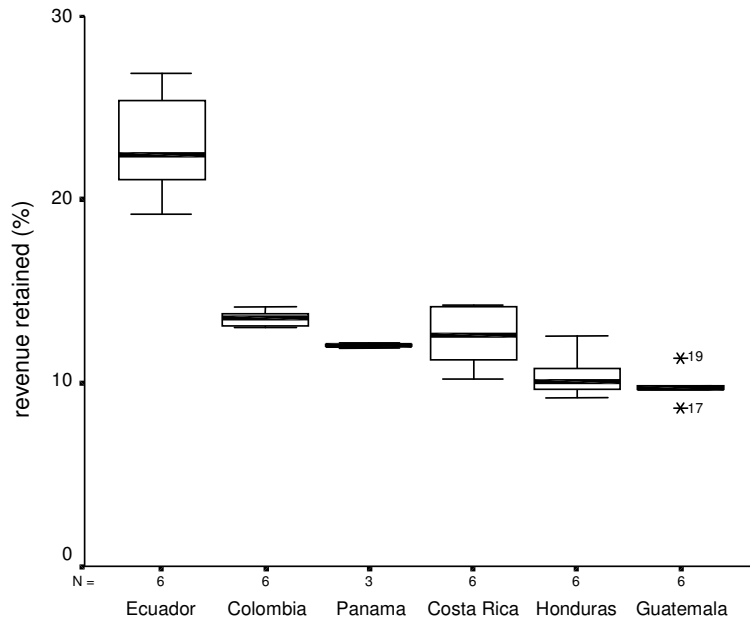
Fig. 24   Box plots of banana revenue of the ACP countries in the British commodity chain (post-SEM)

DISCUSSION AND IMPLICATIONS OF THE DIVISION AND DISTRIBUTION OF REVENUE

There are three findings in this study which require further discussion. First, the division of revenue between the various banana-exporting countries and the importing EU member-states is highly skewed in the favor of EU member-states, which were able to capture median revenues ranging from 81 to 86 per cent of the total commodity chain. This result is consistent with findings of previous research on the division of revenue between exporting and importing countries in the agricultural trade sector, e.g., Maizels (1992) and Talbot (1997), and suggests that the international division of trade revenue in the agricultural sector is likely to have remained largely unchanged since the 1980s.

Second, since the implementation of the SEM the shares of the banana commodity chain retained by actors in Germany and the UK have increased, while that retained in France has decreased. This supports the hypothesis that TNCs in the German market (and to a lesser extent those in the UK) have taken advantage of the tariff to increase their margins through higher retail prices. Additionally, because the German banana market is dominated by US TNCs this also suggests increased vertical integration of the commodity chain.

Third, the shares of revenue retained by the exporting countries differed considerably according to the EU member countries supplied, particularly to those with some form of protectionism. In France, the French DOMs enjoyed the largest median shares of their commodity chains while the dollar-zone exporters retained the least. In Britain, although on average the Caribbean countries retained the largest revenue share of their commodity chains, it is Ecuador that has enjoyed the best performance in that market. Yet, the Ecuadorian performance does not typify the dollar-zone countries, since on average, their median share of revenue retained was 7 per cent less than that of the Caribbean countries. Therefore, the type of trade policy in the destination market can and has influenced the division of revenue along the commodity chain. More importantly though, the exporting country is likely to retain a larger share of the commodity chain if its own TNC controls not only production of the commodity, but also its marketing and distribution.

The fact that the share of revenue retained in Germany was the largest of all the commodity chains analyzed weakens the neo-classical arguments in favor of banana trade liberalization in the EU, all of which were premised on the assumption that consumers in the German market were likely to have enjoyed the best economic welfare in the pre-SEM system. That EU banana retail prices were lowest in Germany in the pre-SEM period was considered a natural outcome of its *laissez-faire* trade policies and so consumers there were assumed to be best off. However, now it appears that although German banana consumers enjoyed the lowest relative retail prices in the EU during the pre-SEM period, it was at the expense of the Latin American countries who retained the least revenue share of the commodity chain.

At the other extreme, protection of the French market in the pre-SEM period appeared not to harm those producing countries which had access to France, since they retained considerably larger shares of revenue along their commodity chains. This is particularly true of the DOMs and France's former African colonies. Even in the British market, where a mix of protectionism and *laissez-faire* existed in the pre-SEM period, supplying countries retained larger shares of their commodity chains than those in the German market. Furthermore, the fact that among all countries supplying Britain, Ecuador retained the largest share of its

commodity chain, despite having its bananas subjected to a tariff, implies that there is no causal relationship between the protection afforded to an individual country and the share of revenue that it retains. Other factors matter too! Ecuador's superior performance is explained by the direct involvement of its banana TNC, NOBOA, in all aspects of the commodity chain. In so doing, NOBOA is able to exploit economies of scale and common governance in a manner rather similar to its major rival TNCs from the US and hence the appropriation of a greater share of the revenue of the commodity chain by Ecuador than comparable exporting countries.

Protectionism, therefore, appears to have had the obliging effect of transferring a larger share of revenue to the producing countries and possibly increased surplus along their respective commodity chains. This result is consistent with Talbot (1997)'s finding on the effect of the International Coffee Agreements on producing countries, where export quotas were utilized.[21] Moreover, it could be the case that the relatively free market in Germany in the pre-SEM period served to create more surplus throughout the banana commodity chains; however, more of that surplus was retained in Germany in the form of profits, at the expense of lesser revenue to its supplying countries.

CONCLUSION

Prior to the implementation of a common policy for the importation of bananas, three distinct types of trade policy existed in the European Union: *laissez-faire* in Germany; protectionism in France; and a mix of the two in Britain. Advocates of EU-wide trade liberalization have maintained that such liberalization would improve consumer and producer welfare, relative to the pre-SEM system.

This study has demonstrated that the pre-SEM system of organization of banana markets in the EU had some impact on the relative shares of revenue retained in the exporting countries and EU member-states. Contrary to the expectations of neo-classical theory (Borrell and Yang, 1990; 1992), countries exporting bananas to the free market in Germany retained the least revenue, while those exporting to France retained the most, with the outcome for those exporting to the British market somewhere in between. Therefore, the type of trade policy that was implemented in the destination market can, and has affected the division and distribution of revenue between the supplying and consuming countries. While in the pre-SEM period the relatively lower retail prices of bananas in Germany might have been good for consumers, this benefit was achieved at the expense of considerably lower revenue shares to the exporting countries. Additionally, since the SEM took effect the median shares of revenue retained by countries exporting to Germany have declined while those of countries exporting to France have increased.

So if liberalized EU banana trade seems to be an instrument for encouraging lowest cost producers to supply the market, they are also bound to retain the least shares of revenue generated at the various stages of the commodity chain. Consequently, if the objective is to widen the gap between the shares of revenue retained in the consuming and producing countries, then liberalization is the correct policy. If, instead, the objective is to promote a more equitable division and distribution of revenue, then the protected markets of the pre-SEM period seem to be more suitable. This result, which is not consistent with theoretical expectations, suggests that TNC oligopolists operating in the relatively free market appropriated some of the benefits which should have been passed onto consumers as super normal profits.

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NOTES

[1] For instance, Gereffi (1999:50) argues that between the early 1980s and the mid-1990s there have been changes in global sourcing of apparel for the United States market. Whereas in 1983 Northeast Asia accounted for 68 per cent of all US apparel imports, with Southeast Asia, South Asia and Central America and the Caribbean accounting for 8 per cent, 4 per cent and 4 per cent, respectively; in 1997 Northeast Asia accounted for only 33 per cent, while Southeast Asia, South Asia and Central America and the Caribbean accounted for 13 per cent, 10 per cent and 16 per cent, respectively.

[2] The process appears to be rather complex and depends upon, among other things, the retail channels in the US through which products are marketed, the level of capital required to produce commodities and whether or not demand might vary according to season. The pineapple sector is dominated by TNCs because of its high capital requirements (Raynolds, 1994:151), while production in the melon and oriental vegetables sector takes place largely under contract, due to lower capital requirements and high seasonality of demand (Raynolds, 1994:152).

[3] Although Goldfrank (1994:272-5) identifies the major actors involved at the various stages of commodity chains, from shipping to retail, no attempt is made to quantify the distribution of revenue from these commodities between Chile and the United States.

[4] According to Talbot (1997:86), TNCs managed to cause a shift in coffee surplus from the exporting countries to the core, by exercising their market power in keeping the price of green coffee low while the price of processed coffee was increased artificially.

[5] The inter-quartile range (IQR) for these observations was 3.1, with lower and upper quartile values of 80.4 and 83.4, respectively. As such, both the maximum (86.4) and minimum (78.9) observed values, were well within the largest and smallest calculated values outside of the box, respectively.

[6] Here the IQR was 2.0, with lower and upper quartile values of 85.0 and 87.0, respectively. Thus both the maximum (87.5) and minimum (83.7) observed values were well within the largest and smallest calculated values outside of the box, respectively.

[7] All of Costa Rica's observations were within 11.8 per cent of the upper and lower quartiles. Costa Rica's IQR was 7.8, with lower and upper quartile values of 15.9 and 23.7, respectively. Both the maximum (25.9) and minimum (12.8) observed values were well within the largest and smallest calculated values outside of the box, respectively.

[8] All of Nicaragua's observations were within 8.3 per cent of the upper and lower quartiles. In this case the IQR was 5.6 and the lower and upper quartile values were 9.3 and 14.8, respectively. Both the maximum (18.5) and the minimum (4.3) observed values were well within the largest and smallest calculated values outside of the box, respectively.

[9] Ecuador was the only one of these countries to record outliers at either extremes of its box plot. Its IQR was 3.0, with lower and upper quartile values of 13.8 and 16.8, respectively. However, its minimum (9.8) and maximum (21.3) observed values were both slightly outside the smallest and largest calculated values outside of the box, respectively.

[10] Roche (1998) provides some evidence in support of better organization of labour in Costa Rica. He argues that the "longest strike in the banana industry, 72 days in 1984, did so much damage to the plantation of UFC in Palmar, Costa Rica, that the company found it uneconomic to rehabilitate the area" (p.120).

Regarding Honduras, Roche (1998:119) continues with the emergence of the modern labor movement there in May 1954 "when approximately 12000 workers of the Tela Railroad company in Honduras, a UFC subsidiary, went on strike for 67 days".

[11] Persistent fluctuations in the exchange rate between the French franc and the United States dollar imply that revenue growth was only 2.5 times in dollar terms. Moreover, while revenue peaked in 1992 in dollar terms, the corresponding maximum is in 1993, in French francs.

[12] In the pre-SEM period, importers, wholesalers and retailers in France retained a median revenue share of 81.1 per cent, compared with those in Germany, who retained a median revenue share of 81.6 per cent.

[13] France's median share of the commodity chain actually decreased from 81.1 per cent in the pre-SEM period to 77.7 per cent in the post-SEM period, although with increased variability.

[14] As is evident from Figure 6.12, the median share of revenue retained in Honduras is slightly more than that retained in Cameroon and Madagascar, and shows considerably less variability. However, equally evident is the smaller number of observations in the case of Honduras, 12, compared with those of Cameroon and Madagascar; 21 and 14, respectively.

[15] As part of France, Martinique and Guadeloupe have guaranteed market access at higher prices than all other exporting countries, which explains why their median revenue shares of the banana commodity chain are considerably larger than those of all other countries.

[16] Madagascar and Cameroon were able to retain 16.0 per cent and 15.9 per cent of their commodity chains in the pre-SEM period, respectively, although with slightly increased variability than for the entire period under study.

[17] Mexico has managed to increase its median share of revenue in the banana commodity chain to 13.3 per cent, although with somewhat more variability than in the pre-SEM period. Additionally, it does appear that the SEM has been *relatively* favorable to Ecuador, whose median share of revenue retained along the French commodity chain increased to 10.4 per cent with considerably less variability.

[18] In the pre-SEM period, importers, wholesalers and retailers in the UK retained a median revenue share of 81.4 per cent, compared with those in Germany, who retained a median revenue share of 81.6 per cent.

[19] Based on St. Lucia's performance. Although St. Lucia's median is somewhat lower than that of St. Vincent and Dominica, the latter two tend to be characterized by outliers and extreme values and somewhat greater variability than the St. Lucia data.

[20] Although there are three outliers in Dominica's data (Figure 22) it is clear that the overall variability is much less, compared with the data for the entire 1978-98 period (Figure 20).

[21] As Talbot (1997:86) put it, the "main reason producing countries fared so well for so long seems to have been the International Coffee Agreements, which were instituted in response to collective action by producing states attempting to increase their incomes from coffee exporting".